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UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE RO

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SUBJECT: Biological Evaluation of Mortality of Douglas-fir Along Moonlight Creek, Greenville Ranger District (Report No. 87-16)

TO: Forest Supervisor, Plumas National Forest

John Dale, FPM entomologist, accompanied Randy Cowley, Greenville Ranger District, to Moonlight Creek on June 30, 1987. The purpose was to view and evaluate the scattered mortality of old-growth Douglas-fir in section 13 (Fig. 1), which was considered typical of this drainage of mixed-conifer stands. However, it proved much easier to diagnose the cause of mortality of pole-size and sapling Douglas-firs than the old-growth.

Mortality of sapling and pole-size trees occurred as single trees and groups of two to three trees, with the characteristic crown decline symptoms of black stain root disease and frequent stress crops of cones (see Pest Biology attached). The occurrence of the mortality in or near areas of soil disturbance such as roads and skid trails also is characteristic of black stain root disease. Chopping into the base and root-collar of the smaller trees exposed the diagnostic dark brown to black stain in five of eight trees examined. The frequency in which the stain was found indicated that the small trees with crown symptoms, but no observed stain, also have black stain root disease. The stain is not always easily detected because it may be located in roots that can be examined only after extensive soil excavation, it may be buried in the wood, or it may be present only in a small section of the circumference.

Mortality in the old-growth consisted of an undetermined number of widely scattered spots of one to two trees. Crown symptoms did not appear typical of the disease as did those of small trees, but this may have been caused by the broken and overmature character of the crowns. Black stain was not found after chopping into any large trees. However, the inability to find the stain does not preclude the presence of the disease. Nevertheless, it does introduce a degree of uncertainty. Mortality of the older Douglas-firs may be a result of over-maturity for the site quality and, in some cases, black stain root disease.

The drainage is scheduled for a series of harvests in about five years, and given that concentrated centers of mortality are not present, the present action of salvaging accessible mortality seems a reasonable management policy. Longevity of individual Douglas-firs cannot be predicted, nor can we predict which trees will be attacked by the root-inhabitating beetles that may vector the pathogen. Sanitation harvesting within the next five years could be based on

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the appearance of typical crown symptoms or detection of the stain before tree mortality.

The presence of black stain root disease in young trees may indicate a problem in regenerating specific, limited sites to Douglas-fir. Use of nonhost planting stock is an alternative for these sites. A more intensive evaluation may be appropriate prior to harvest to fully define impacts of the root disease and regeneration alternatives.

If you have any questions regarding this site visit, please contact John Dale at (415) 556-4321.

JOHN NEISESS
FPM Program Leader
State and Private Forestry

Enclosure

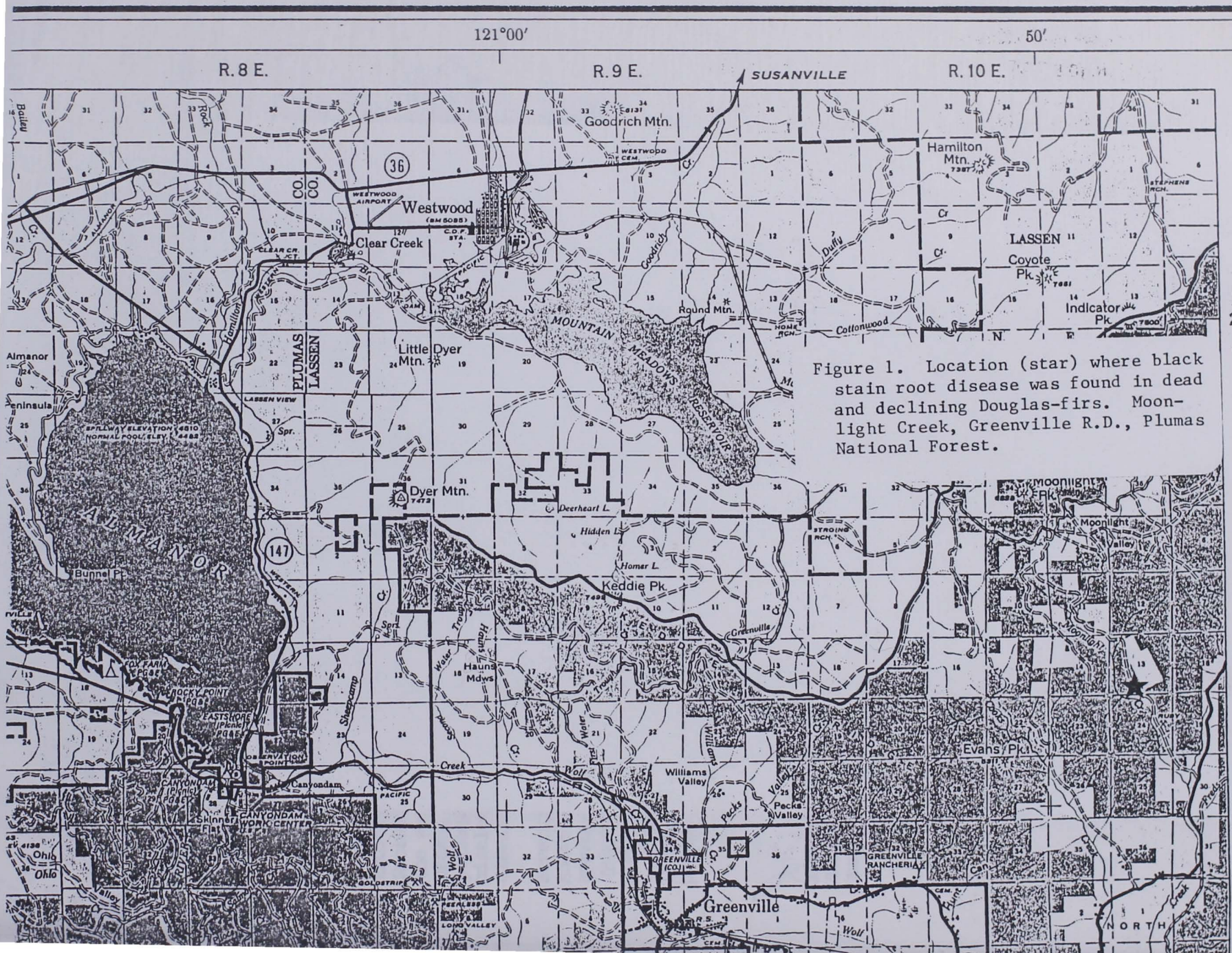

Figure 1. Location (star) where black stain root disease was found in dead and declining Douglas-firs. Moonlight Creek, Greenville R.D., Plumas National Forest.